

UTILITY	MIN. COVER
SANITARY	2.8
STORM	1.5
WATER	2.0
HYDRO	0.9
BELL	0.76
CABLE	0.76
GAS	0.76

**NOTES:**

- REFER TO PAVEMENT DESIGN IN THE ENGINEERING MANUAL FOR MINIMUM PAVEMENT THICKNESS.
- WHERE THE SOILS CONSULTANT'S RECOMMENDATIONS EXCEED MINIMUMS NOTED, THE SOILS CONSULTANT'S RECOMMENDATIONS SHALL BE USED.
- A MIN. BOULEVARD WIDTH OF 4.5m IS REQUIRED TO ACCOMMODATE A 1.8m WIDE SIDEWALK AND HYDRO VAULTS / TRANSFORMERS, INCLUDING THEIR REQUIRED GROUNDING GRID. COORDINATION WITH ENOVA POWER CORP. IS REQUIRED FOR ALL NEW HYDRO INSTALLATIONS.
- WHEN MULTI-USE-PATHS ARE PROPOSED, THE LOCATION OF UTILITIES WILL NEED TO BE REVISED AND COORDINATED WITH THE LOCAL UTILITY PROVIDERS ON A CASE BY CASE BASIS.

SCALE: NTS

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.

**STANDARD DRAWING**

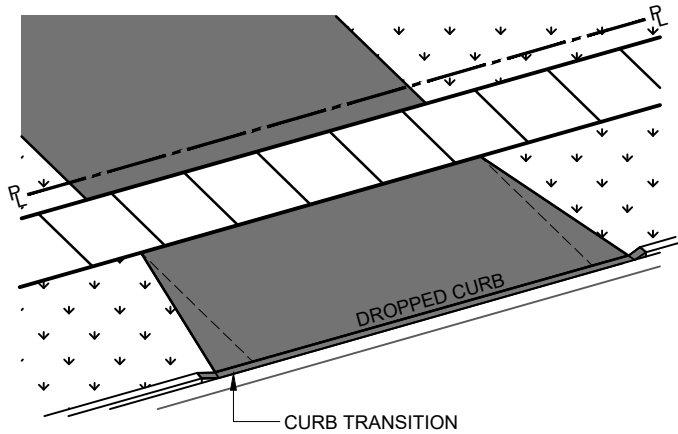
**TYPICAL ROAD CROSS SECTION**

REV 1 | MAY 2023



**CW-201**

**ISOMETRIC VIEW**



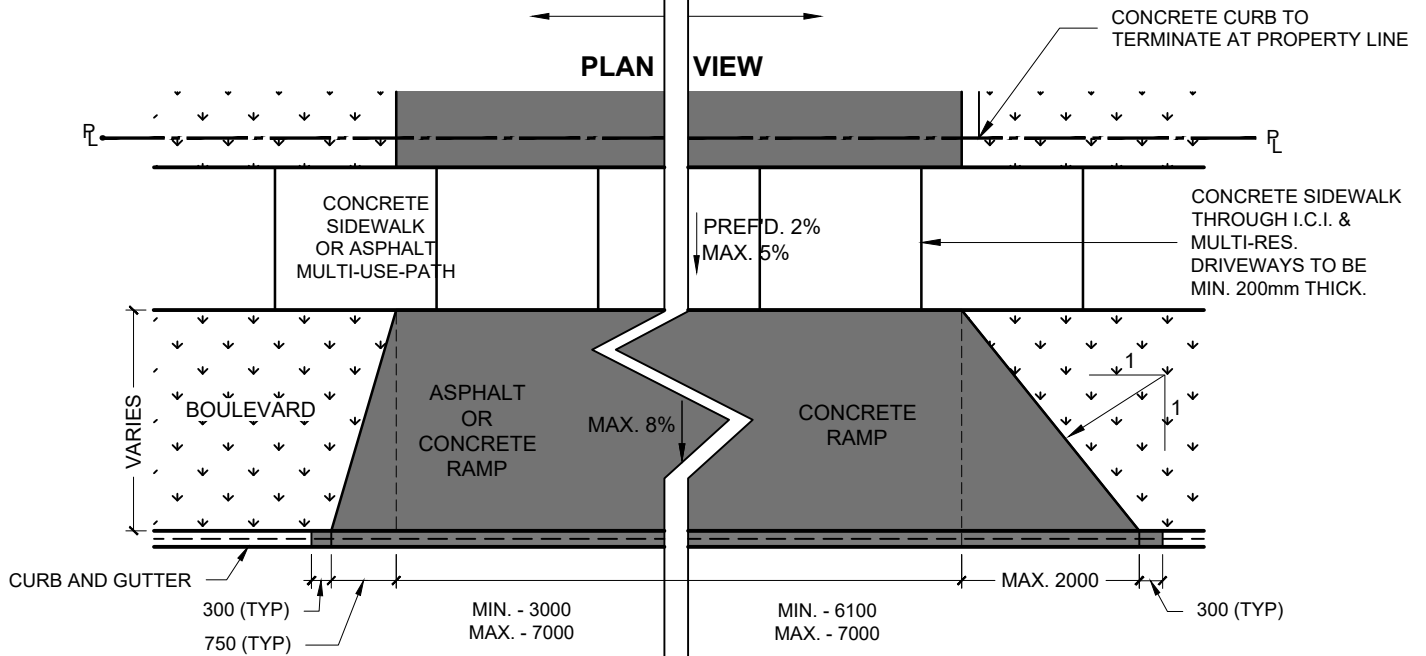
**NOTES:**

1. FOR CONCRETE RAMPS, EXPANSION JOINT MATERIAL SHALL BE INSTALLED AT THE BACK OF THE CONCRETE CURB AND A BOND BREAKER AT THE SIDEWALK AND RAMP INTERFACE.
2. FOR CONCRETE RAMPS A SAWCUT SHALL BE PLACED AT THE CENTRELINE OF THE DRIVEWAY RAMP AND EXTENDED THROUGH THE SIDEWALK AND CURB.
3. SAWCUTS SHALL BE PLACED IN THE SIDEWALK WHERE THE DRIVEWAY RAMP INTERSECTS THE SIDEWALK AND THE CURB AT THE BOTTOM OF THE CURB TRANSITION.
4. BOULEVARD SHALL BE RESTORED WITH MIN. 150mm OF SCREENED TOPSOIL AND NO. 1 NURSERY SOD, OR LOW-GROW SEED MIX AND FERTILIZER AS PER VOLUME 6 OF THE CITY OF WATERLOO COMPREHENSIVE DESIGN GUIDELINES & REQUIREMENTS (CDGR).
5. PRIOR TO PLACEMENT OF SOD IN BOULEVARD, FERTILIZER (MIN. 0-25-0 TO 0-50-0 MAX.) SHALL BE APPLIED TO TOPSOIL AS PER MANUFACTURER'S APPLICATION RATE.
6. DRIVEWAY TO BE A MINIMUM OF 1.2m FROM ANY STREET FURNITURE.
7. DEPRESSED CURB AND GUTTER AT DRIVEWAY ENTRANCES SHALL HAVE AN ADDITIONAL 50mm BENCH TO SUPPORT ADJACENT CONCRETE RAMPS, REFER TO OPSDE 600.040.

**RESIDENTIAL**

**INDUSTRIAL, COMMERCIAL, INSTITUTIONAL & MULTI-RESIDENTIAL**

**PLAN VIEW**



RESIDENTIAL DRIVEWAY RAMPS MAY BE ASPHALT OR CONCRETE.

MIN. PAVEMENT THICKNESS FOR ASPHALT  
 - 60mm HL3  
 - 200mm GRAN. 'A', COMPACTED TO 100% SPMDD

MIN. PAVEMENT THICKNESS FOR CONCRETE  
 - 150mm CONCRETE, 32 MPa AT 28 DAYS.  
 - 150mm GRAN. 'A', COMPACTED TO 100% SPMDD

INDUSTRIAL, COMMERCIAL, INSTITUTIONAL & MULTI-RESIDENTIAL DRIVEWAY RAMPS MUST BE CONCRETE.

MIN. PAVEMENT THICKNESS FOR CONCRETE  
 - 200mm CONCRETE, 32 MPa AT 28 DAYS.  
 - 150mm GRAN. 'A', COMPACTED TO 100% SPMDD

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.

**STANDARD DRAWING**

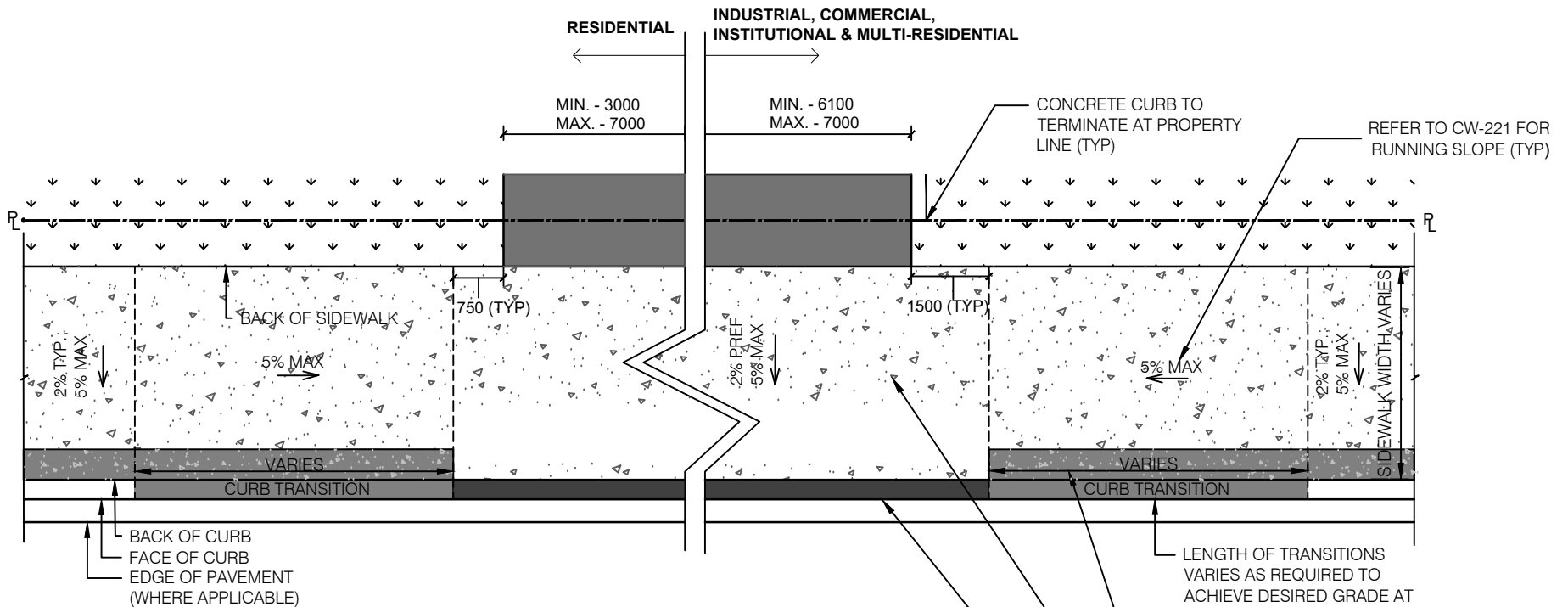
**REV 1**

**MAY 2023**

**DRIVEWAY RAMP DETAILS**



**CW-211**



**NOTES:**

1. SAWCUTS SHALL BE PLACED IN THE SIDEWALK AT THE BOTTOM OF THE CURB TRANSITION.
2. DEPRESSED CURB AND GUTTER AT DRIVEWAY ENTRANCES SHALL HAVE AN ADDITIONAL 50mm BENCH TO SUPPORT ADJACENT CONCRETE RAMPS, REFER TO OPSD 600.040.
3. DRIVEWAY TO BE MINIMUM 1.2m FROM ANY STREET FURNITURE.
4. REFER TO CW-221 FOR COLOURED IMPRESSED CONCRETE COLOUR AND DETAILS.

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.

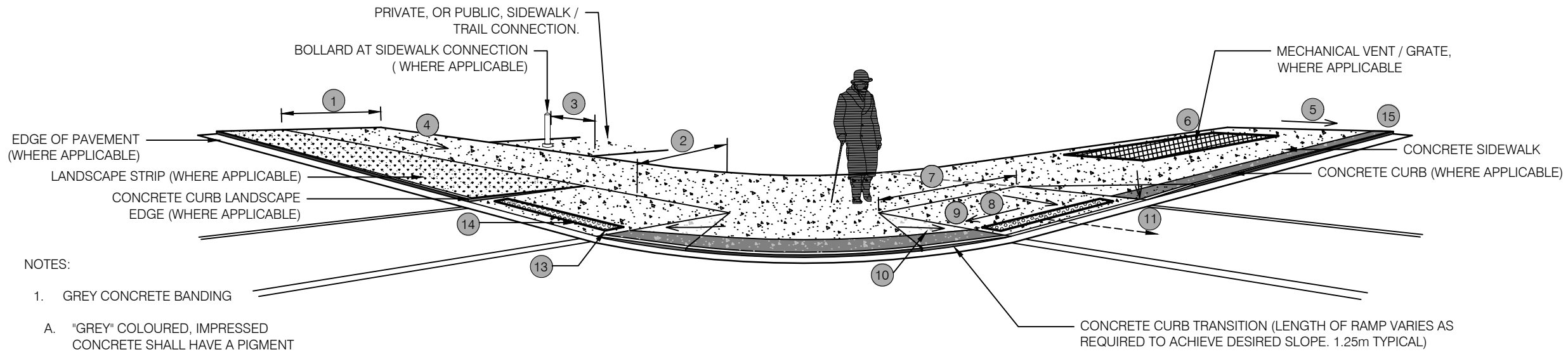
**STANDARD DRAWINGS**

**CURB-FACE SIDEWALK DRIVEWAY RAMP DETAIL**

REV 1      MAY 2023

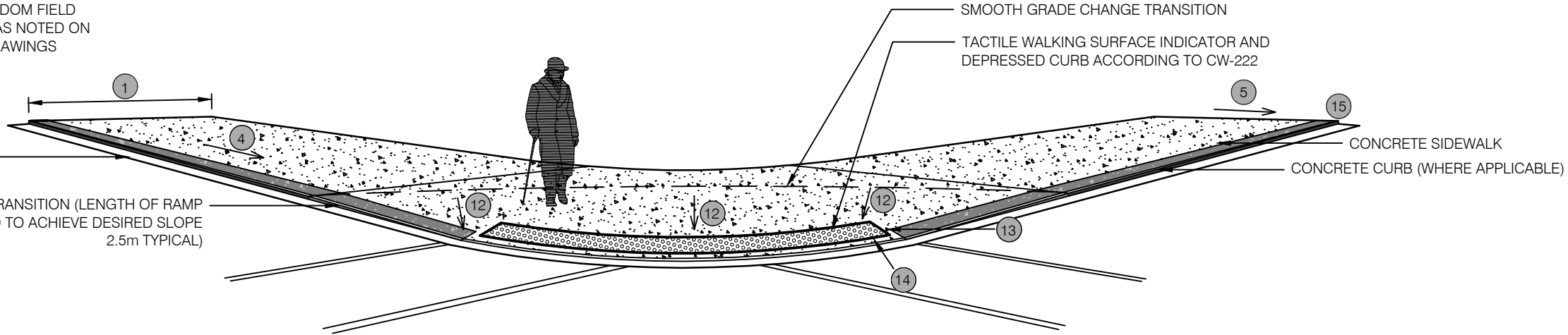


**CW-212**



### CURB RAMPS AT INTERSECTION CORNER

- NOTES:
- 1. GREY CONCRETE BANDING
  - A. "GREY" COLOURED, IMPRESSED CONCRETE SHALL HAVE A PIGMENT TO PORTLAND CEMENT RATIO OF 5%.
  - B. ALL COLOURED CONCRETE IS TO BE SEALED WITHIN 7 DAYS AFTER PLACEMENT WITH AN ACRYLIC SEALER WITH A SLIP-RESISTANT ADDITIVE.
  - C. THE CONCRETE IS TO BE POWER-WASHED AND ADEQUATELY DRIED PRIOR TO PLACEMENT OF THE CONCRETE SEALER.
  - D. THE STAMPING PATTERN IS TO CONSIST OF A RANDOM FIELD STONE FINISH OR AS NOTED ON THE CONTRACT DRAWINGS



### CONTINUOUS DEPRESSED CURB AT INTERSECTION CORNER

KEY	ELEMENT	DIMENSION
1	CLEAR WIDTH	1800mm PREFERRED MIN. 1500mm MIN.
2	CLEAR WIDTH - LEVEL LANDING ADJACENT TO CURB RAMP	1200mm MIN
3	CLEAR WIDTH - ENTRANCE TO EXTERIOR PATH OF TRAVEL	850mm MIN
4	RUNNING SLOPE	1:20 MAX (5%), OR SLOPE OF ADJACENT ROADWAY
5	CROSS SLOPE	1:20 MAX (5%) 1:50 PREFERRED (2%)
6	OPENING (VENT, GRATE ETC.)	20mm DIA. MAX

CURB RAMPS:

7	CLEAR WIDTH OF RAMP RUNNING SLOPE	1200mm MIN
8	RUNNING SLOPE OF RAMP < 75mm 75mm > 200mm > 200mm	1:8 (12.5%) MAX 1:10 (10%) MAX DESIGN AS A RAMP
9	CROSS SLOPE OF RAMP	1:50 (2%) MAX
10	FLARED SIDE MAXIMUM SLOPE	1:10 (10%) MAX
11	ALIGNMENT OF RAMP	MUST ALIGN WITH DIRECTION OF TRAVEL

DEPRESSED CURBS:

12	RUNNING SLOPE	1:20 (5%) MAX
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TACTILE WALKING SURFACE INDICATORS:

13	DEPTH	610mm MIN
14	PLACEMENT ON CURB RAMP	150mm - 200mm FROM BACK OF CURB

GREY CONCRETE BANDING:

15	WIDTH REFER TO NOTES FOR FURTHER DETAILS	300mm MIN
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ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.

## STANDARD DRAWINGS

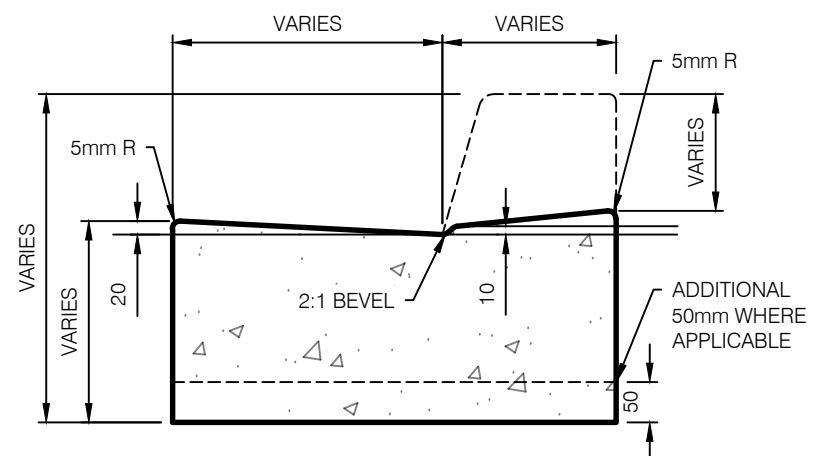
# AODA SIDEWALK AND CURB RAMP DETAILS

REV 1 MAY 2023

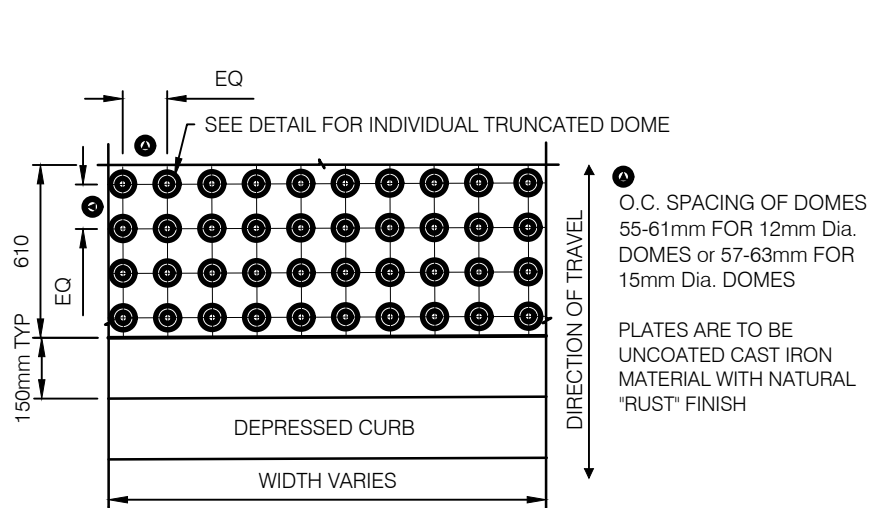


CW-221

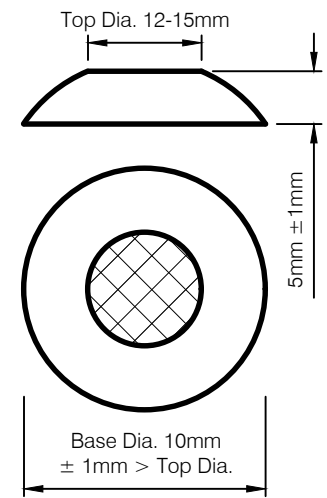
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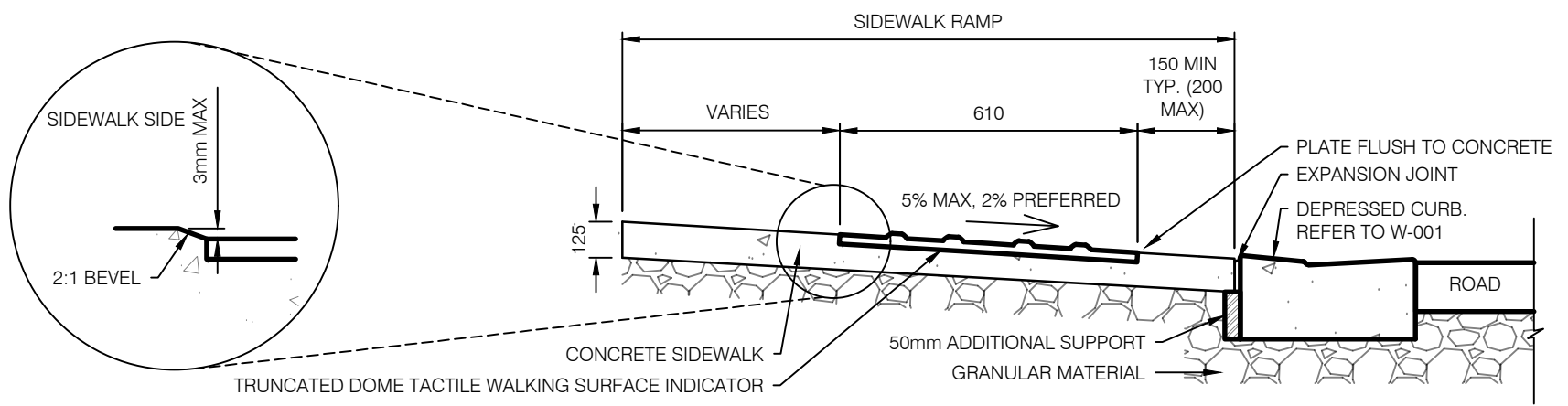
**DEPRESSED CURB (PREFERRED)**



**TRUNCATED DOME PATTERN**



**TRUNCATED DOME DETAIL**



**CROSS SECTION OF TACTILE WALKING PLATE AT SIDEWALK AND CURB**

NOTE:  
 RADIAL TACTILE WALKING PLATES MUST BE USED FOR DEPRESSED CURBS ALONG A RADIUS CURB AT INTERSECTIONS AND MUST MATCH THE CURB RADIUS.

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.

**STANDARD DRAWINGS**

**TACTILE WALKING SURFACE INDICATOR DEPRESSED CURB DETAILS**

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CW-222

NOTES:

REFER TO CW-221 & CW-222 FOR TACTILE WALKING SURFACE INDICATOR & DEPRESSED CURB DETAILS.

A. 2.5m MIN. FOR UN-SIGNALIZED INTERSECTIONS WITH PEDESTRIAN CROSSING OR SEPARATED CROSS-RIDE PAVEMENT MARKINGS, 2.1m MIN. FOR UN-SIGNALIZED INTERSECTIONS WITHOUT PEDESTRIAN OR SEPARATED CROSS-RIDE PAVEMENT MARKINGS

B. ADAPTIVE 'HUMP' - CURB HEIGHT IS MODIFIED IN ORDER TO MAINTAIN A MAX SLOPE OF 5%. ALONG THE PATH OF TRAVEL. CURB HEIGHT MAY VARY BETWEEN A MIN OF 75mm TO 150mm DEPENDING ON THE DISTANCE BETWEEN THE DEPRESSED CURBS. THE MIN LENGTH OF THE ADAPTIVE 'HUMP' IS 0.4m.

C. WHEN DISTANCE IS LESS THAN 2.2m, USE CONTINUOUS DEPRESSED CURB AT INTERSECTION CORNER. WHEN DISTANCE IS GREATER THAN OR EQUAL TO 2.2m, USE TWO SEPARATE DEPRESSED CURBS AT INTERSECTION CORNER.

D. ACHIEVING THE REQUIRED GRADES AT CROSSING LOCATIONS MAY VARY THE LIMITS OF CONSTRUCTION. SIDEWALK PANELS UP & DOWNSTREAM OF THESE CROSSINGS MAY ALSO NEED TO BE RE-POURED.

E. WHERE ACHIEVABLE, AN ADDITIONAL LEVEL AREA (2% CROSS FALL) CAN BE ADDED BEHIND THE EXISTING SIDEWALK & DEPRESSED CURB.

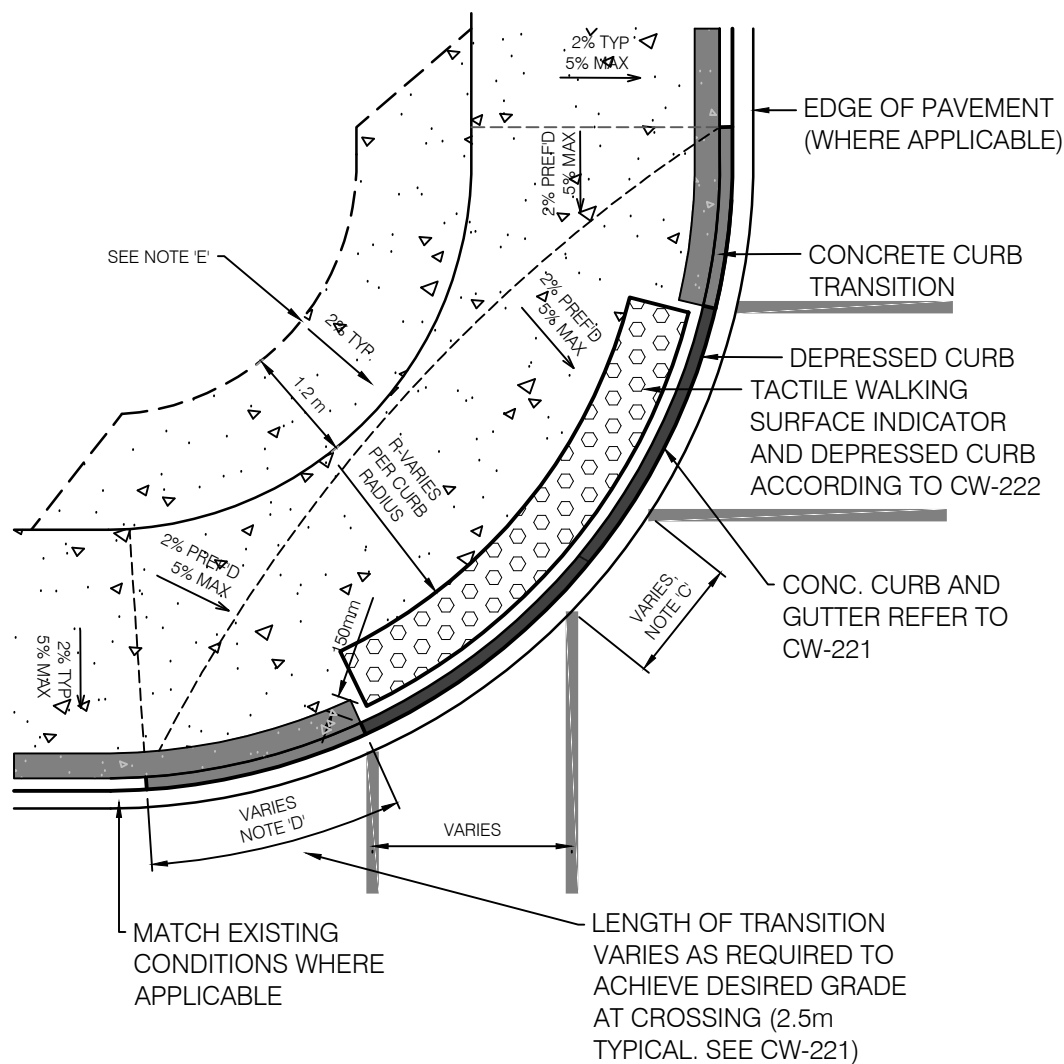
1. TACTILE WALKING SURFACE INDICATORS ARE TO BE INSTALLED AT ALL PEDESTRIAN CROSSINGS IN CONJUNCTION WITH ALL ROAD AND SIDEWALK CONSTRUCTION, RECONSTRUCTION AND RESURFACING PROJECTS (WHERE APPLICABLE).

2. EACH LOCATION IS SITE SPECIFIC AND CONSULTATION WITH THE CITY OF WATERLOO MAY BE REQUIRED FOR NON TYPICAL INTERSECTIONS AND PEDESTRIAN CROSSINGS.

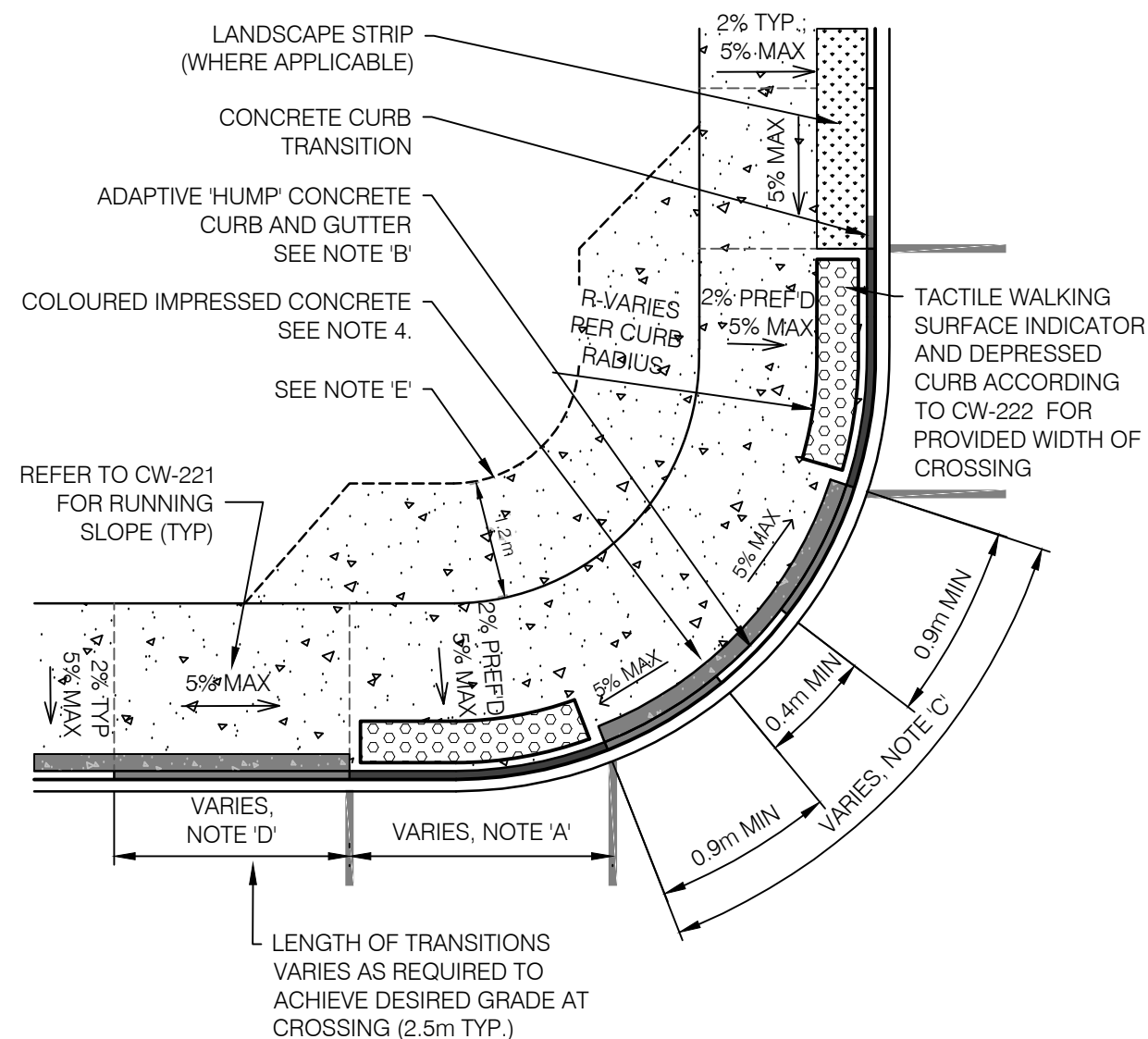
3. PLATES ARE TO BE UNCOATED CAST IRON MATERIAL WITH NATURAL "RUST" FINISH (REFER TO REGION OF WATERLOO STANDARD SPECIAL PROVISIONS RWSS 14 FOR LISTED/APPROVED SUPPLIERS).

4. REFER TO CW-221 FOR COLOURED IMPRESSED CONCRETE COLOUR AND DETAILS.

5. FOR DEPRESSED CURBS AT SIGNALIZED INTERSECTIONS OF TWO CITY OF WATERLOO STREETS, USE THESE STANDARDS. FOR SIGNALIZED INTERSECTIONS WITH A REGIONAL ROAD, REFER TO REGION OF WATERLOO STANDARDS. EACH PROJECT TO BE CONFIRMED WITH CITY OF WATERLOO TRANSPORTATION OPERATIONS.



**CONTINUOUS DEPRESSED CURB AT INTERSECTION CORNER**



**SEPARATED DEPRESSED CURBS AT INTERSECTION CORNER**

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.

**STANDARD DRAWINGS**

**DEPRESSED CURB DETAILS FOR INTERSECTIONS**

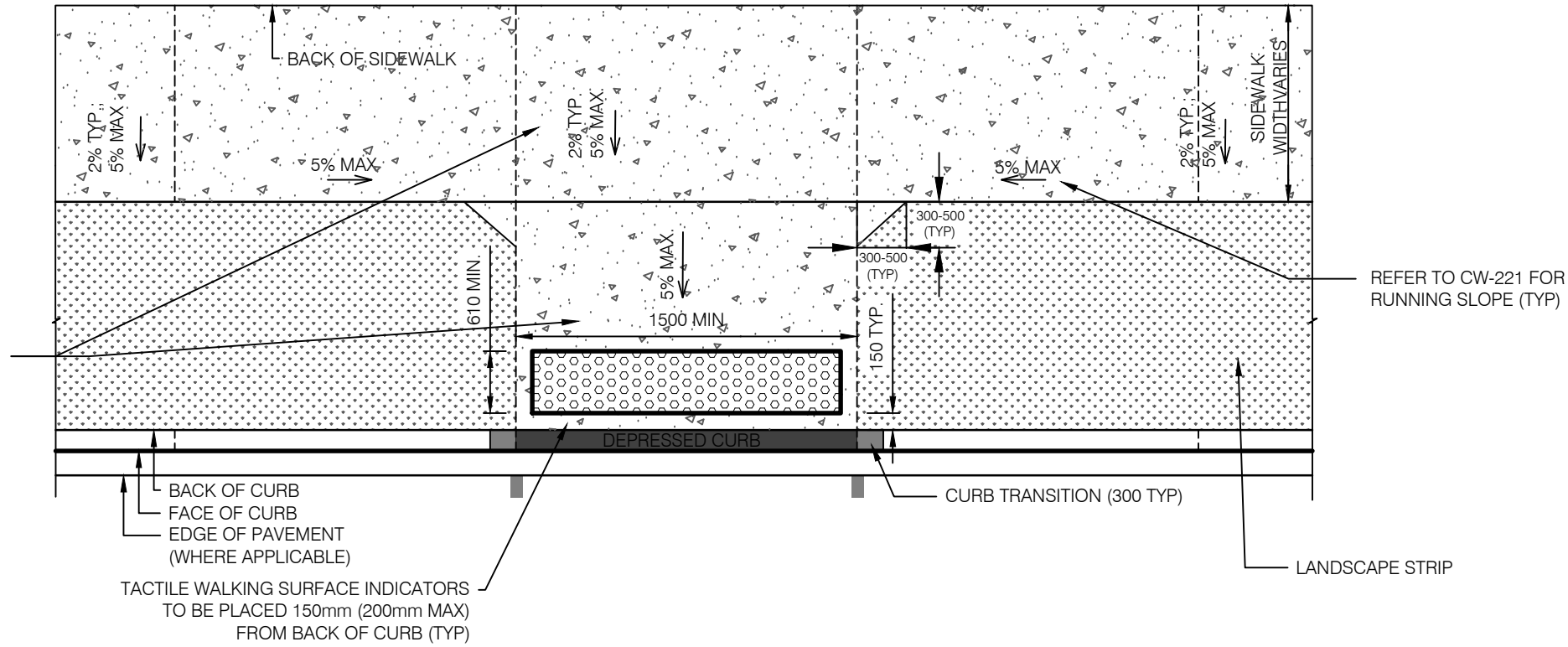
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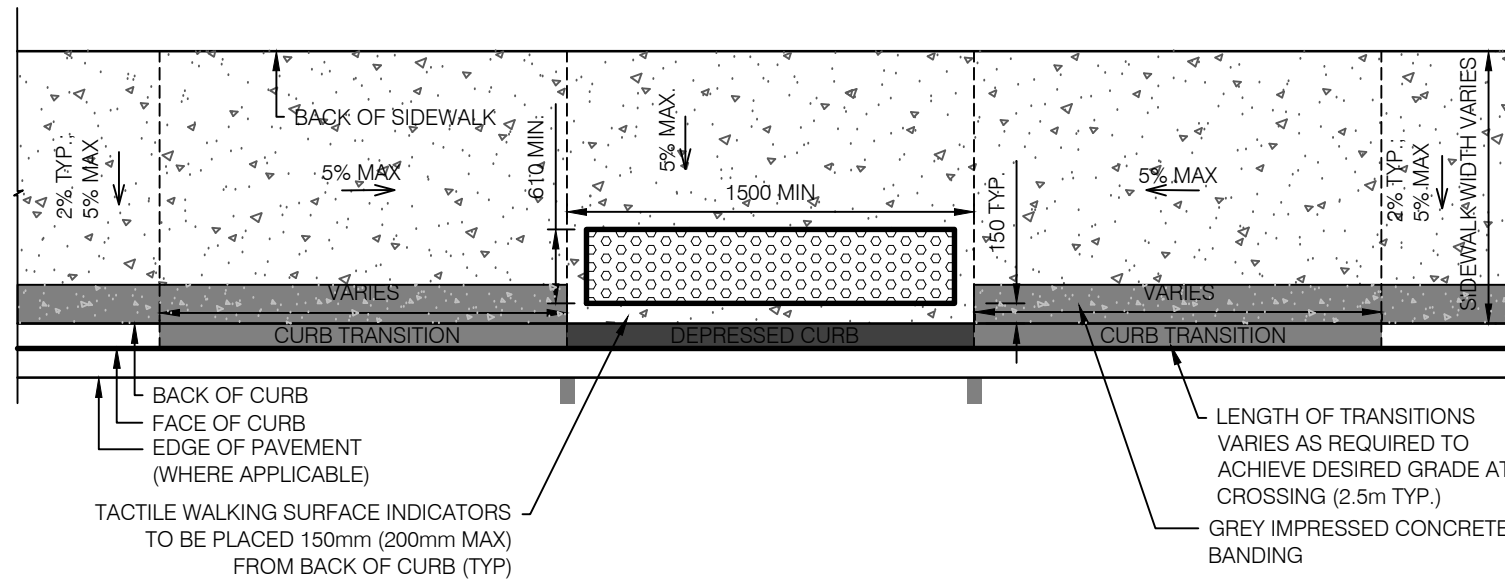
CW-223

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IF THE DEPRESSED CURB IS TO BE UTILIZED AS A MAINTENANCE ACCESS, THE RAMP AND SIDEWALK THROUGH THE ACCESS ARE TO BE MIN. 200mm THICK.



### MIDBLOCK CROSSING WITH BOULEVARD



### MIDBLOCK CROSSING WITH CURB-FACE SIDEWALK

NOTES:

REFER TO CW-221 & CW-222 FOR TACTILE WALKING SURFACE INDICATOR & DEPRESSED CURB DETAILS.

1. TACTILE WALKING SURFACE INDICATORS ARE TO BE INSTALLED AT ALL PEDESTRIAN CROSSINGS IN CONJUNCTION WITH ALL ROAD AND SIDEWALK CONSTRUCTION, RECONSTRUCTION AND RESURFACING PROJECTS (WHERE APPLICABLE).
2. EACH LOCATION IS SITE SPECIFIC AND CONSULTATION WITH THE CITY OF WATERLOO MAY BE REQUIRED FOR NON TYPICAL INTERSECTIONS AND PEDESTRIAN CROSSINGS.
3. PLATES ARE TO BE UNCOATED CAST IRON MATERIAL WITH NATURAL "RUST" FINISH (REFER TO REGION OF WATERLOO STANDARD SPECIAL PROVISIONS RWSS 14 FOR LISTED/APPROVED SUPPLIERS).
4. REFER TO CW-221 FOR COLOURED IMPRESSED CONCRETE COLOUR AND DETAILS.

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.

## STANDARD DRAWINGS

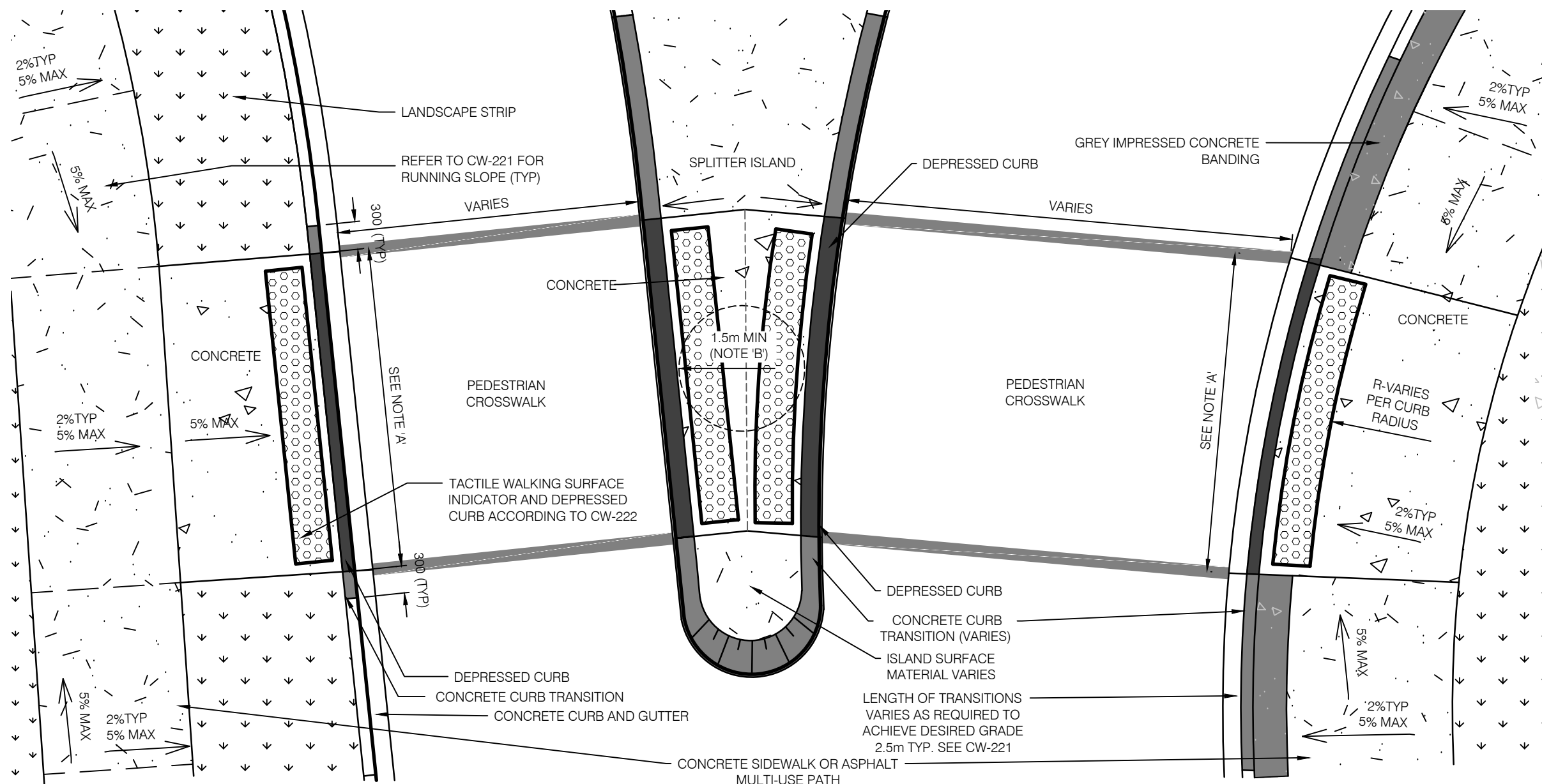
# DEPRESSED CURB DETAILS FOR MIDBLOCK CROSSINGS

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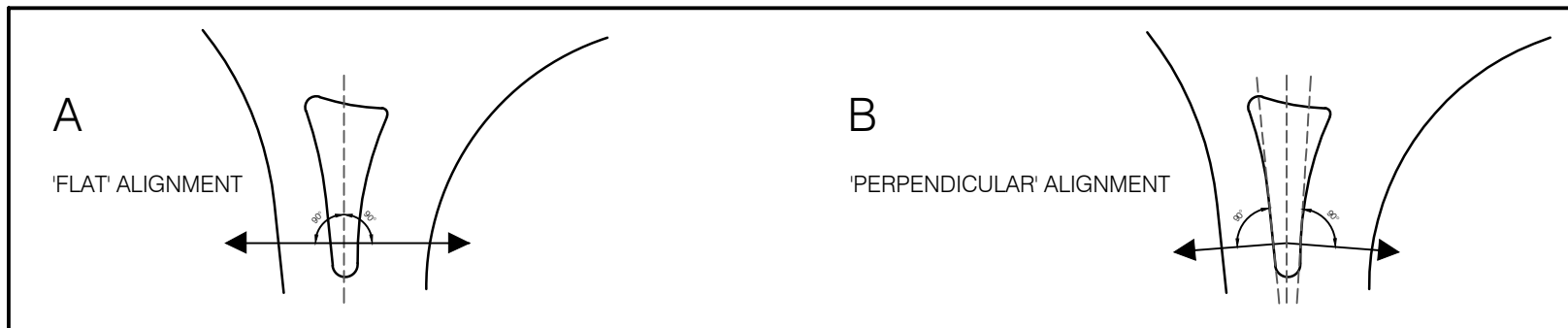
CW-224

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**NOTES:**

1. A2.5m MINIMUM WIDTH FOR ROUNDABOUT LEG CROSSWALK PAVEMENT MARKINGS.
2. MINIMUM 1.5m CLEAR WIDTH REQUIRED IN ALL DIRECTIONS BETWEEN CURBS OF SPLITTER ISLAND WITH A MAX. SLOPE OF 5%.
3. LIMITS OF CONSTRUCTION WILL VARY BASED ON THE RUNNING SLOPE OF SIDEWALK, CROSS SLOPE OF SIDEWALK, AND HEIGHT OF CURB.
4. DEPRESSED CURBS TO BE PROVIDED FOR WIDTH OF ALL PEDESTRIAN CROSSINGS.
5. TACTILE WALKING SURFACE INDICATORS TO BE PROVIDED ONLY WITHIN WIDTH OF PEDESTRIAN CROSSINGS.
6. TACTILE WALKING SURFACE INDICATORS ARE TO BE INSTALLED AT ALL PEDESTRIAN CROSSINGS IN CONJUNCTION WITH ALL ROAD AND SIDEWALK CONSTRUCTION, RECONSTRUCTION AND RESURFACING PROJECTS (WHERE APPLICABLE).
7. EACH LOCATION IS SITE SPECIFIC AND CONSULTATION WITH THE CITY OF WATERLOO MAY BE REQUIRED.
8. ROUNDABOUT GEOMETRY IS CONCEPTUAL. ALL PAVEMENT MARKINGS AND SIGNAGE FOR ROUNDABOUTS PER CONTRACT DRAWINGS, OR, AS DIRECTED BY CITY OF WATERLOO.
9. 'PERPENDICULAR' CROSSWALK ALIGNMENT (i.e. PLACING EACH LEG OF CROSSWALK PERPENDICULAR TO CURB OF ROAD FOR ENTRY & EXIT LANES) IS PREFERRED TO 'FLAT' CROSSWALK ALIGNMENT (i.e. PLACING CROSSWALK PERPENDICULAR TO CENTERLINE OF THE APPROACH ROADWAY) TO IMPROVE EASE OF CROSSWALK ENTRY FOR MOBILITY IMPAIRED PEDESTRIANS. SEE DIAGRAMS A & B (LEFT)
10. PLATES ARE TO BE UNCOATED CAST IRON MATERIAL WITH NATURAL "RUST" FINISH (REFER TO THE REGION OF WATERLOO STANDARD SPECIAL PROVISIONS RWSS 14 FOR LISTED/APPROVED SUPPLIERS).
11. REFER TO CW-221 FOR COLOURED IMPRESSED CONCRETE COLOUR AND DETAILS.



ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.

# STANDARD DRAWINGS

## DEPRESSED CURB DETAILS FOR ROUNDABOUTS

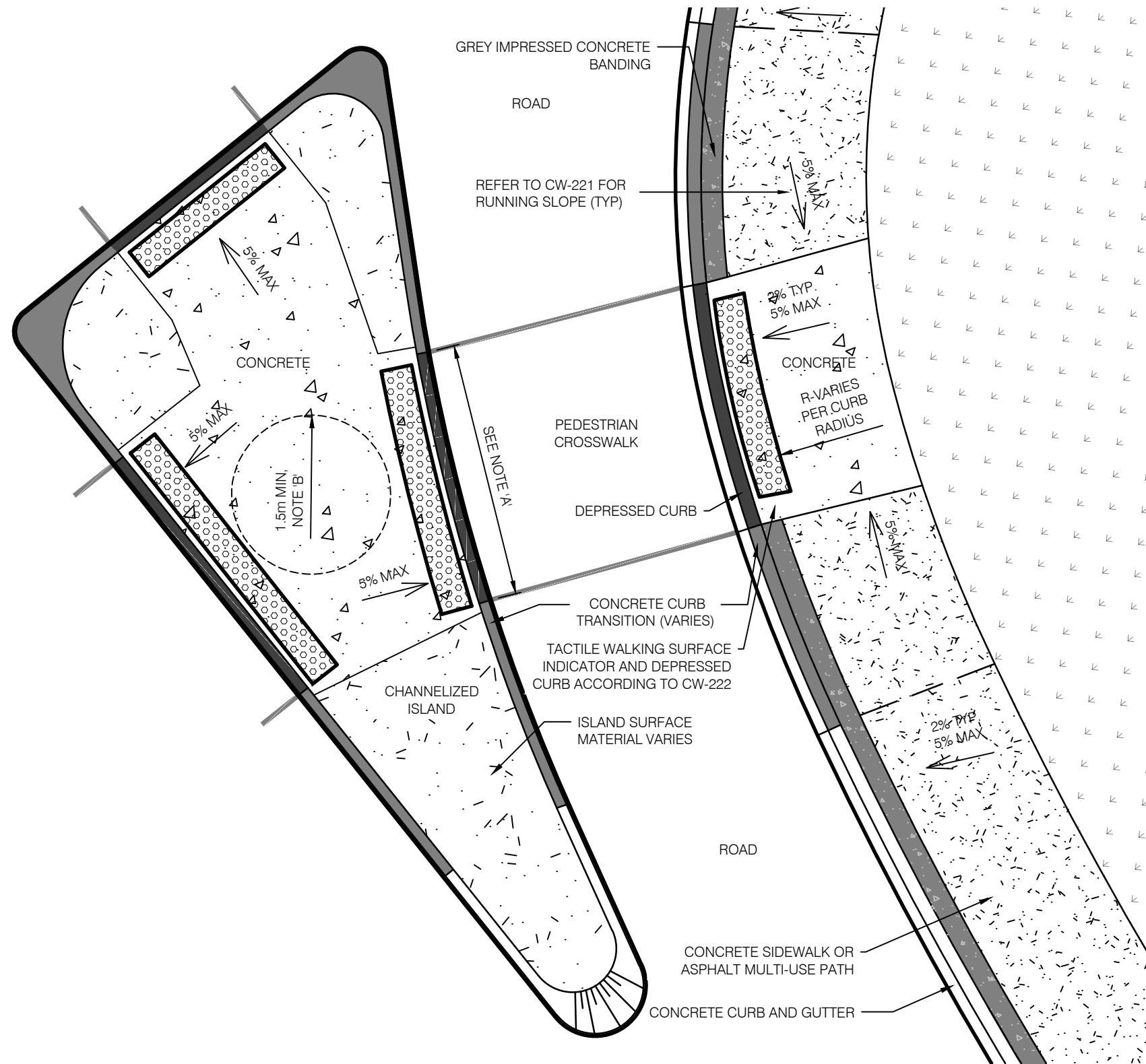
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CW-225

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NOTES:

- A. 2.5m MINIMUM FOR CHANNELIZED ISLAND CROSSINGS.
- B. MINIMUM 1.5m CLEAR WIDTH REQUIRED IN ALL DIRECTIONS BETWEEN CURBS WITH A MAX. SLOPE OF 5%.
- C. LIMITS OF CONSTRUCTION WILL VARY BASED ON THE RUNNING SLOPE OF SIDEWALK, CROSS SLOPE OF SIDEWALK, AND HEIGHT OF CURB.
- 1. DEPRESSED CURBS TO BE PROVIDED FOR WIDTH OF ALL PEDESTRIAN CROSSINGS.
- 2. TACTILE WALKING SURFACE INDICATORS TO BE PROVIDED ONLY WITHIN WIDTH OF PEDESTRIAN CROSSINGS.
- 3. TACTILE WALKING SURFACE INDICATORS ARE TO BE INSTALLED AT ALL PEDESTRIAN CROSSINGS IN CONJUNCTION WITH ALL ROAD AND SIDEWALK CONSTRUCTION, RECONSTRUCTION AND RESURFACING PROJECTS (WHERE APPLICABLE).
- 4. EACH LOCATION IS SITE SPECIFIC AND CONSULTATION WITH THE CITY OF WATERLOO MAY BE REQUIRED.
- 5. CHANNELIZED ISLAND GEOMETRY IS CONCEPTUAL. ALL PAVEMENT MARKINGS AND SIGNAGE PER CONTRACT DRAWINGS, OR, AS DIRECTED BY CITY OF WATERLOO.
- 6. PLATES ARE TO BE UNCOATED CAST IRON MATERIAL WITH NATURAL "RUST" FINISH (REFER TO REGION OF WATERLOO STANDARD SPECIAL PROVISIONS RWSS 14 FOR LISTED/APPROVED SUPPLIERS).
- 7. FOR DEPRESSED CURBS AT SIGNALIZED INTERSECTIONS, REFER TO REGION OF WATERLOO STANDARDS.
- 8. REFER TO CW-221 FOR COLOURED IMPRESSED CONCRETE COLOUR AND DETAILS.

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.

## STANDARD DRAWINGS

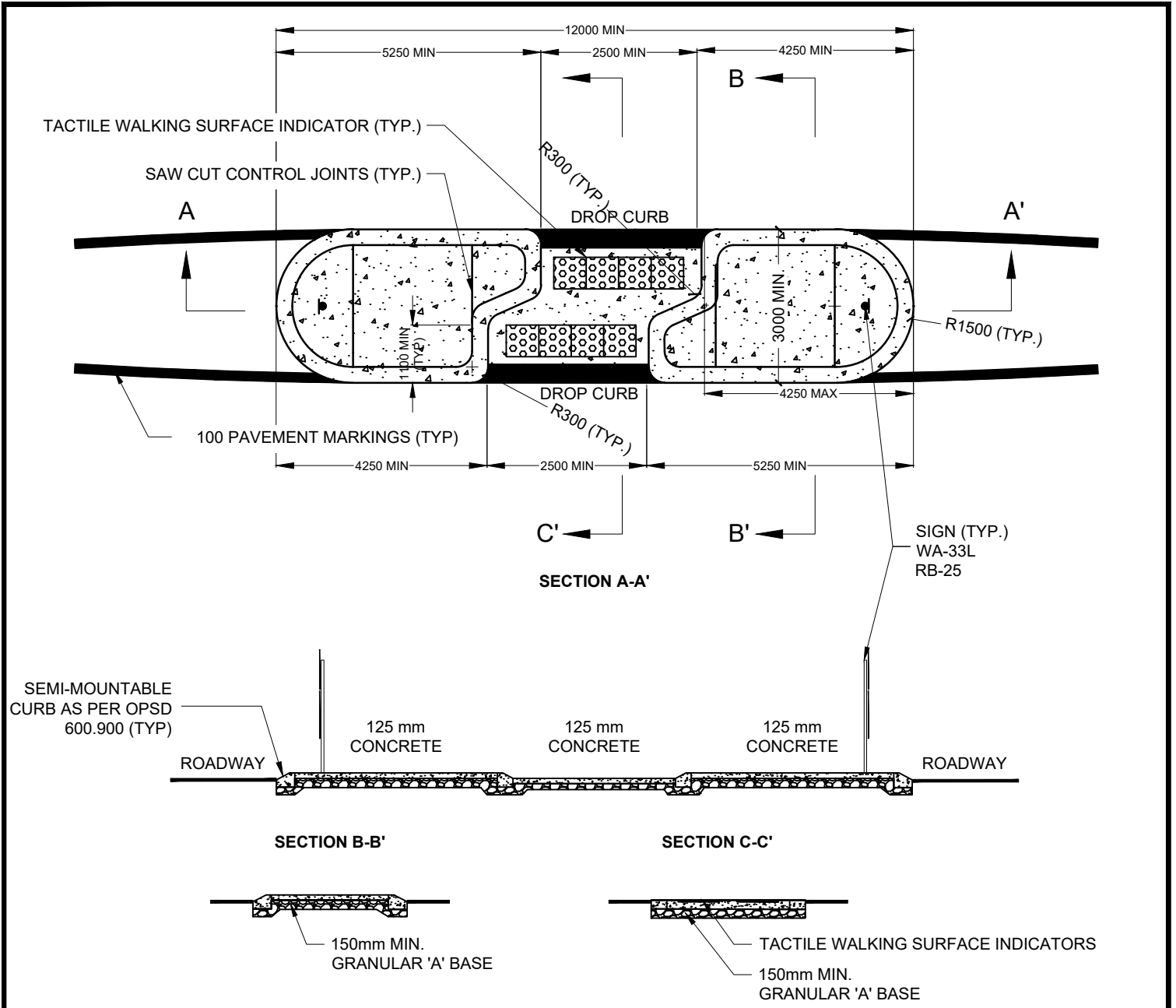
# DEPRESSED CURB DETAILS FOR CHANNALIZED ISLANDS

REV 1 MAY 2023



CW-226

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**NOTES:**

1. MIN. 3000 mm WIDE CONCRETE ISLAND, IN SPECIAL CIRCUMSTANCES, ABSOLUTE MIN. WIDTH CAN BE 2000 mm
2. SUPPLY AND INSTALL 150mm GRANULAR 'A' BASE.
4. ALL TACTILE WALKING SURFACE INDICATOR DETECTABLE WARNING PLATE DESIGNS ARE TO BE FINALIZED BY THE PLATE MANUFACTURER (610 mm x 610 mm SQUARE OR RADIAL EDGE OF PLATES TO MATCH CURB RADIUS.)
5. TACTILE WALKING SURFACE INDICATOR PLATES TO BE PLACED 150 mm OFFSET FROM BACK OF CURB (200 mm MAXIMUM). MINIMUM 150 mm CONCRETE REQUIRED FROM OUTER EDGE OF PLATE ASSEMBLY TO EDGE OF SIDEWALK.
6. CONSTRUCT PEDESTRIAN REFUGE ISLAND, WITH CURB FACE AS SEMI-MOUNTABLE CURB AS PER OPSD 600.090 WITH 32MPa CONCRETE. DROP CURBS TO BE CONSTRUCTED TO CREATE A FLUSH TRANSITION WITH THE ASPHALT AS INDICATED IN CROSS SECTION C-C'.
7. IN RETROFIT SITUATIONS, SAWCUT EXISTING ASPHALT AND POUR CONCRETE AGAINST SAWCUT EDGE.

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.

**STANDARD DRAWING**

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**PEDESTRIAN REFUGE ISLAND**



**CW-241**